

# Zero Retries issue 0191 2025-02-28

*Zero Retries is an independent newsletter promoting technological innovation that is occurring in Amateur Radio, and Amateur Radio as (literally) a license to experiment with and learn about radio technology. Radios are computers - with antennas! Now in its fourth year of publication, with 2500+ subscribers.*

About Zero Retries

**Steve Stroh N8GNJ, Editor**

Web version of this issue - <https://www.zeroretries.org/p/zero-retries-0191>

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## Request To Send

*Commentary by Editor Steve Stroh N8GNJ*

### Paid Subscribers Update

My thanks to **Prefers To Remain Anonymous 66** for becoming an **Annual Paid Subscriber** to Zero Retries this past week!

*Financial support from Zero Retries readers is a significant vote of support for the continued publication of Zero Retries.*

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### Announcing the Zero Retries Store!







I'm delighted to announce that the [Zero Retries Store](#) is now open for business!

The **Zero Retries Store** now has a link on the top bar of the Zero Retries page, between **Zero Retries Guides** and **Archive**.

From the Zero Retries About page's section on the Zero Retries Store:

The [Zero Retries Store](#) was activated in February 2025. It sells a variety of Zero Retries branded merchandise - hats, T-shirts, etc. Primary customer service of the Zero Retries Store is provided by Tina Stroh KD7WSF. (For the first few weeks, please send an [email to Tina](#) that you ordered something.)

Over the course of 2025, the Zero Retries Store will also feature one of a kind ephemera being retired from Steve's [N8GNJ Labs](#) that he'd like to find a new home for. Revenue from these items will provide some additional funding for continuing to publish Zero Retries and related expenses.

Think of the N8GNJ Labs items as a friendly, personal flea market, slowly liquidating Amateur Radio (mostly) and electronic ephemera to a friendly crowd. All N8GNJ Labs items *will be priced to sell and find a new home*, not to make exorbitant or even market rate profits.

The Zero Retries Store is a secondary priority to Zero Retries - we're not professional sellers (but we strive to provide friendly, professional, courteous, prompt service).

The Zero Retries Store was originally going to be called the **Zero Retries Unabashed Merchandizing Division**, but that's just a bit too unwieldy. Before that unwieldy name, it was going to be named something else that was popularized by a certain radio show about "cars", but turns out they were smart enough to [copyright](#) that phrase. 😊

While his purchase wasn't through the Zero Retries Store, credit for the first mail order purchase of Zero Retries merch goes to Zero Retries reader DJ Merrill N1JOV. He noticed a brief reference to my (prototype) Zero Retries hat and emailed us "Merch, you say? I'd love some Zero Retries merch!"). He then waited patiently through much... *development* of our... *processes* to be able to sell him his Zero Retries T-shirt, which he told us he's worn proudly to work.

The first transaction on the Zero Retries store was a purchase of a donation by our daughter Merideth KK7BKI.

##

### **Hamshack Hotline Isn't the Only Amateur Radio VOIP Service**

After my mention in **Zero Retries 0190** of getting an extension on Hamshack Hotline in, several people mentioned to me that Hamshack Hotline isn't the only Internet Voice over IP telephone system for Amateur Radio Operators. Two others are:

**AmateurWire** - <https://amateurwire.org>

Welcome to AmateurWire.org the home of the AmateurWire VOIP Service. If you are not already registered come join us. Our service works with desktop IP phones, Softphones on PC, MAC and Smart Phones. You don't have to have an IP phone to use our services.

I also offer some other services such as email addresses from the AmateurWire.org domain so if you would like YOURCALL@AmateurWire.org for an email address once you have registered just submit a support ticket and we can get you set up.

**Hams Over IP** - <https://hamsoverip.com>

Ham Radio Operators from all over the world have volunteered their time, skills, and resources to create a new and dynamic Ham Radio voice over IP service for our ham radio community.

#### **FEATURES**

- Fully featured, searchable, BLF integrated phonebook
- Up to TEN endpoints per extension
- IAX Trunks, SIP Trunks
- Conference Bridges for Individuals, Clubs and Groups

I know nothing about the features, relative merits, user bases, etc. of any of these systems, just that I saw a few Zero Retries Interesting folks mention their



Hamshack Hotline extensions and thought I'd join the fun.

My Thanks to Lloyd Colston KC5FM for my first conversation on Hamshack Hotline, who left me a funny and welcoming voice mail on my HH phone.

###

### Heat - It's a Good Thing

My wife Tina and I went to the Seattle Home and Garden Show last weekend. I didn't see anything remarkable until the very last aisle where someone was selling a space heater that I didn't know I needed (for my office, which is tucked into a corner of N8GNJ Labs) - until I saw it. I had been getting by, barely, with an inefficient space heater on the floor which didn't so much heat the office as "broke the worst of the chill". This new unit was a pain to install on the ceiling (it had a unique bracket whose geometry was barely comprehensible - I installed it wrong, twice.) But now that it's installed, it's silent, efficient, and nicely heats my office when I'm *in* the office; I don't have to run it all the time. Most notably, I could install it on the ceiling of my office so it's not underneath my feet or in the path of my chair as I roll around between desks. This one upgrade made my office *much* more usable in chilly weather. Thus I'm now much more productive being able to use the larger screen and other features of my office instead of just a laptop (in the warm house).

###

Have a great weekend, all of you co-conspirators in Zero Retries Interesting Amateur Radio activities!

Steve N8GNJ

Leave a comment

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## Why Hasn't Anyone Tried to Develop Something Like IP400 Sooner?

By Steve Stroh N8GNJ

*A Zero Retries reader asked this question almost in passing, and it merited a longer answer than I could provide at that moment. Background on the IP400 Network Project - <https://adrcs.org/adrcs/ip400-network-project/>*

Why hasn't someone, some organization, or some company tried to develop something like the IP400 Network Project sooner than now? There are a number of reasons.

- "They" did - it's called [Amateur Radio Emergency Data Network - AREDN](#). But at the moment, AREDN is limited to use on devices designed for commercial operation on license-exempt spectrum in the 2.4 GHz and 5 GHz microwave bands. AREDN works great in areas where the terrain is amenable to microwave operation - high locations where Amateur Radio equipment is allowed and affordable, with a dense enough population to support such networks.
- It just didn't occur to a lot of most Amateur Radio Operators and organizations that *we should try* to create something like IP400. We've lived with the limitations of data over Amateur Radio (using radios designed for voice, thus capable of only lower speed data) that Amateur Radio has kind of internalized that if you want to do reasonably high speeds, you must use microwave radios and spectrum, and if you want to use VHF / UHF bands, you're relegated to comparatively low data rates.
- We've tried, and failed to develop higher speed data radios. Some notable attempts at higher speed data radios for Amateur Radio include:
  - Two attempts by TAPR to create a Frequency Hopping Spread Spectrum radio for the 902-928 MHz band
  - [Northwest Digital Radio UDRX-440](#)
  - [FaradayRF Digital Transceiver](#)
  - [RPX-100](#), a project by the Austrian Radio Amateur Society (OEVSV) [funded by a grant for ARDC](#) to develop a Software Defined Transceiver for 50 / 144 / 440 MHz.
- Sometimes we've succeed at developing higher speed data radios, and networks, for a while, but are now discontinued:
  - [WA4DSY 56k Radio Frequency \(RF\) modem](#), . The WA4DSY modem required a 28 MHz to (desired band) transverter. I'm not aware of any network using the WA4DSY technology remaining in operation.
  - [Kantronics D4-10 Data Radio](#) which was great and popular in the era for building packet radio networks in Amateur Radio 420-450 MHz band. Unfortunately, it used crystals (now all-but-unobtainium) for setting the operating frequency, with no follow-on unit that was synthesized.
  - [SYMEK TRX4S High Speed Data Transceiver](#) which was synthesized, and capable, and popular in Europe, but made in Germany and thus relatively unknown in the US.
- The Icom D-Star DD mode was only implemented in Icom radios on the 1240-1300 GHz bands, so range was limited (though repeaters are available). The Icom ID-1 radio was expensive (\$600+) and is now discontinued. Icom continues to support DD mode with a repeater and incorporating DD mode into the Icom IC-9700 and Icom IC-905 radios.

One stark reality is the perception that there's little commercial incentive (reasonable profits to be made) in developing a new, higher speed data communications system for the (perceived to be shrinking) Amateur Radio Market. The few remaining companies that offer data communications products for Amateur Radio, such as [Kantronics](#), [Timewave](#), and [Tigertronics](#) are all very small companies and are largely selling systems based on legacy technology.

For higher speed data communications in Amateur Radio, it's simply cheaper, faster, and easier to use Internet connectivity. For lower speed data communications, voice radios can provide some reasonable data speeds, such as VARA FM being able to accomplish up to 25 kbps.

It's also the case that those who have expertise in designing new data communications system for VHF / UHF radio are able to find ample employment and thus have little incentive to "come home to play with radio design" after a full, taxing day of doing so.

But three factors have emerged in the last few years to make it feasible to attempt a new data communications system for Amateur Radio such as IP400:

- Radio chipsets / modules have recently become available that significantly reduce the complexities of designing VHF / UHF radios. It's overstating the case to say "just slap a radio module onto a printed circuit board"... but compared to the former issues of designing a VHF / UHF radio from mostly discrete components and limited function chips, the modules make building a radio much simpler.
- Powerful, inexpensive computer power. Basically, most of the complexities of radio can be reduced to I+Q baseband signals and then processed on a dedicated, powerful, but still inexpensive computer.
- Software Defined Radio technology has pushed most of the issues of data communications over radio - modulations, protocols, networking, etc. into *software*, which can then be tackled collaboratively using prior art and other frameworks such as GNU Radio.

An additional factor, that in my opinion presents a window of opportunity for a new data communications system in Amateur Radio is the increasing trend of "quiet voice repeaters". Basically... if a voice repeater is largely going unused... why *not* adapt it to handle data communications as well as voice? This idea is still controversial and not widely understood... but as repeaters sit idle, the question will inevitably arise in the minds of the repeater's sponsors... "Why keep this repeater on the air if no one *cares* enough about it to *use* it".

I posit that the most significant factor of why hasn't someone, some group, some company has not attempted something like the IP400 Network Project before now is that most Amateur Radio Operators simply haven't noticed that fundamental radio technology *has vastly improved* to the point that *it is feasible* to attempt to develop a new data communications system for radio like IP400... *by* Amateur Radio... specifically *for* Amateur Radio.

I don't think those of us involved in the IP400 Network Project are the only ones who *could* attempt such a project. We're not fundamentally smarter, or fundamentally more capable than everyone else in Amateur Radio.

*But I do think that those of us involved in the IP400 Network Project are the first ones to **try** to accomplish such a project in **this** era, with **this** these **new technologies**, with enough vision, passion, energy, and the commitment required to make it happen.*

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## Amateur Radio Over Different "Radio" Mediums

By Steve Stroh N8GNJ and Bill Diaz KC9XG

*I received an Interesting email by Bill Diaz KC9XG (reprinted with permission). This triggered a thought experiment about "radio" experimentation in general.*

I just spent the day with a manufacturer (more of an importer) of several models of PTT Over Cellular radios. Markets include mom and pop operations as well as regional and nationwide companies. They even have a version for First Responders (FirstNET) users.

These PoC radios are killing 2 way radio, including Trunked systems. No need to buy an expensive trunking radio, when you can use your cell phone to do essentially the same thing on the cellular network. Forget about buying a base station, antenna, paying tower rental for a dedicated 2 way system.

The dedicated PTT Over Cellular phones are usually Android or Linux (some IOS too) radios, with a PTT button and a SOS button on some. The phones have GPS, and usually a smallish display. Automatic Vehicle Location, Group calling, Geofencing, you name it. PoC radios run around \$300 or so, with a monthly charge for each unit. A regular cell phone can suffice, but no external PTT or SOS button. Just another app on the phone and a monthly service charge.

...

Perhaps we should be exploring an interface between First Responder Cellular dispatch and Ham radio? First Responder Dispatch could initialize organized Ham Radio PoC Talk groups during emergencies.

Something to think about, seamless Ham/First Responder Dispatch communications on the same network during major events. This could also be limited to Net control operators on Ham Radio repeaters during emergencies, Skywarn nets etc.

KC9XG's email triggered an interesting thought experiment about "radio" experimentation in general.

I've been saying for some time that commercial radio communications have improved in reliability and availability to the point where conventional two way radio, especially in Amateur Radio, increasingly isn't needed for emergency communications. It was telling that in Washington, a "served agency"<sup>1</sup> quietly discontinued its involvement with Amateur Radio. No real explanation was given, other than a management change and re-evaluation decided that Amateur Radio was no longer needed as part of the served agency's operations.

There's an old thought experiment - what are the first principles *real* use case? For commercial (and public safety two way) it's *immediate communications*. For example, a taxi company didn't sign up to pay subscription fees to support the commercial trunked repeater system on the mountain in their community. They just want to stay in close touch with their drivers and know where their taxi fleet is located.

Thus... whatever technology / service / system fulfills the *real* use case, most efficiently and most cost effectively, will generally win. We're seeing this trend all over the place - podcasts displacing broadcast radio; streaming video displacing Direct Broadcast Satellites, etc.

Three major technical evolutions have informed my perspective:

- [First Responders Network Authority \(FirstNET\)](#) provides hardened, prioritized mobile service on the AT&T Network. Not to be left out, [Verizon](#) and [T-Mobile](#) have created their respective first responder programs, though they have no apparent involvement with FirstNET.
- Iridium provides [push to talk services](#) over their satellite network. Thus you can use a no-infrastructure (to support, or get damaged) radio network that works anywhere in the world.
- Starlink broadband Internet service was the real game changer in my perspective. Near instant broadband connectivity via Wi-Fi and Ethernet, nearly anywhere in the world, for reasonable rates. [Starlink Mini](#) actually fits in a backpack and can be operated on 12 volts DC or a USB-C battery pack.

Another development in the above perspective was learning about [Information Technology Disaster Resource Center \(ITDRC\)](#), a volunteer organization dedicated to emergency communications of this century, utilizing satellites, Internet, TCP/IP and networking, Ethernet, Wi-Fi, etc. In my perspective, ITDRC is far better aligned with the realities of communications emergencies in this era than most of Amateur Radio.

What does all of the above have in common? No (specific) need for Amateur Radio Operators / Amateur Radio licenses, unique Amateur Radio domain knowledge, Amateur Radio spectrum, Amateur Radio infrastructure, etc.

The above is solely observation, not criticism of Amateur Radio. As recently as a decade ago, Amateur Radio was highly relevant in emergency communications because:

- Cellular infrastructure was fragile (easily taken offline and easily overwhelmed by usage demands) in emergencies.
- Iridium was still using the original satellites which used antiquated (by current standards) technology and was easily overwhelmed by usage demands in emergencies.
- Starlink didn't exist, and Geosynchronous Earth Orbit (GEO) satellites were problematic and expensive to use, especially to provide backhaul communications due to the latency issues inherent in GEO orbit.

But that was then, this is now, and the communications landscape for emergency communications *has* changed.

That emergency communications might not need Amateur Radio involvement... at least to the degree it was needed and useful a decade ago, and that the current services can make use of individuals with no Amateur Radio background, triggered a parallel thought experiment about experimenting with radio communications that doesn't involve Amateur Radio. The following examples involve "transmitting" - two way communications. Any reception of communications (at least in the US) is de facto legal<sup>2</sup>; only transmitting is restricted to licensed entities.

### Experimenting with Satellite

My first example of "experimenting with radio technology that isn't Amateur Radio" is my longstanding desire to experiment with a GEO satellite similar in scope to the [Amateur Radio QO-100 payload](#) in GEO over the Eastern Hemisphere. It doesn't seem likely that there will be such a payload available in Western Hemisphere in the immediate future. But it remains a fun thought experiment for US "civilians" to be authorized to use the US Military's FLTSATCOM satellites operating in the UHF band. These satellites appear to be very lightly used by the US Military and are subject to occasional use and abuse by unauthorized users, and perhaps some authorized use by US civilians would be useful. Since FLTSATCOM doesn't use Amateur Radio spectrum, there's no (overt) requirement for authorized users to be Amateur Radio Operators (though an Amateur Radio background and experience would probably be a persuasive qualification for being an authorized user of FLTSATCOM).

I don't have any specific ideas of experimenting with commercial GEO satellites, including the use of Very Small Aperture Terminals (VSATs) (which offer basic data communications. VSATs are often used for credit card verification and other basic services). It's been widely observed that usage of GEO satellites is declining precipitously for broadband Internet (most users are switching to Starlink for better performance and price) and Direct Broadcast Satellite (most users are switching to streaming video over Internet (and often, Starlink)). Thus in the next few years, there might be "good deals to be had" for GEO satellite usage as the GEO satellite providers look for *any* new revenue opportunities to offset the steep investments and fixed costs of operating GEO satellites.

Another way to experiment with satellite that isn't Amateur Radio is the increasingly popular and usable Starlink system which is my primary Internet access at the moment. One of the most interesting aspects of experimenting with Starlink is that it's nearly completely position independent, including use in aviation and marine uses, and works nearly anywhere terrestrially. One of the most interesting aspects of Starlink is that it's IPv6 "native"; each Starlink terminal is allocated static IPv6 addresses, and that makes for some interesting experimentation possibilities. Another aspect of experimenting with Starlink is that it seems that if two Starlink users are within the same ground footprint of a Starlink satellite passing overhead, the data traverses from user to satellite to user, without involving the Starlink ground and Internet infrastructure. One experiment I'd like to try in the near future is setting up a Voice (and perhaps video) over Internet Protocol (VOIP) device operating on IPv6 and communicate with another Starlink user with 100 miles or so of me and see if / how well that works.

### Experimenting with Mobile Networks

Amateur Radio... and radio / technology experimenters in general have been using mobile telephone networks for experimentation for decades now. Mobile telephony service providers have ample unused capacity on their networks and so offer "Internet of Things / telemetry" service packages. One interesting such service is "trail cams" that can send short videos and photos to individual's mobile devices. The device is sold with basic mobile services included. This opens up all kinds of applications, and Amateur Radio uses mobile telephony for, among other things, linking repeaters (audio, telemetry, control), and of course "Internet radio hotspots".

The most notable (to me) experimental use of mobile networks are the PTT Over Cellular radios mentioned by KC9XG at the beginning of this article. But you don't even need dedicated devices (though the form factor is handy for focused use cases) - there are many "walkie talkie" apps for smartphones such as [Zello](#) (though Zello seems to have morphed itself into an enterprise system, with per user per month pricing. What appeals to me about this class of applications is that they're instant communications within a preset group, rather than "dial them up like telephony" applications that are offered for free such as Signal and WhatsApp).

### License Exempt Spectrum

[LoRa](#), [Meshtastic](#), [Reticulum](#), and the [adaptation of Automatic Packet Reporting System \(APRS\) to use LoRa](#) and license exempt spectrum have

collectively created a new wave of radio experimentation in license-exempt spectrum. These technologies have overcome many of the frustrating limitations of experimenting with radio communications in license exempt spectrum such as the limitations of Wi-Fi and Bluetooth. It's easy, inexpensive, and fun to experiment with these newer technologies and it's relatively easy to "get up to speed" by watching online video tutorials and participate in online discussions when you have questions. And, of course, the fun that results from being able to connect with other nearby experimenters.

A "new"<sup>3</sup> technology, [802.11ah / Wi-Fi HaLow](#) designed to operate in spectrum below 1 GHz creates some interesting possibilities for data communications including reasonably high speeds, channels as small as 1 MHz, etc.

An under-appreciated, but significant development for text messaging, and perhaps more, is [Ribbit](#), a smartphone app which acoustically connects to any two way unit to transmit and receive data and text messages. When active, the app "listens" (via the smartphone's microphone) to the radio's speaker for Ribbit transmissions. Then, to reply, the user pushes the radio's push to talk button, and the Transmit button on Ribbit, and the smartphone speaker sends a Ribbit data burst to be picked up by the radio's microphone. *There is no direct electrical connection to the radio.* Thus Ribbit can be used on any voice radio system such as Family Radio Service portable radios. I haven't seen any information about whether it's usable on digital voice radio systems.

Though it remains technically illegal to use "data" in services that only explicitly allow "voice" - such as Citizens Band, realistically there's nothing to stop such usage when the radios adhere to the letter of the law (no built-in data capability). Just as [FM operation was eventually allowed with CB](#), I view it as inevitable that some basic data capability (beyond short messaging that's allowed in other license exempt radio services) will eventually be allowed in CB.

It's not widely known, but the US provides a VHF band where data is allowed - [Multiple Use Radio Service \(MURS\)](#), and a few vendors make [MURS data radios](#).

Non-commercial long range microwave networking is becoming increasingly popular because the equipment has declined in price and rapidly improved in capability. Basically, the sensitivity and selectivity of the radio receivers has improved exponentially, and the data rates have also increased tremendously. It's not widely acknowledged, but many "Amateur Radio" microwave networks actually use license exempt spectrum in 5 GHz because it's easier to implement, equipment is more widely available, and there are no onerous Amateur Radio restrictions such as prohibitions of commercial activity and encryption. By portraying such networks as "Amateur Radio", it's a little easier and often less expensive (or free) to secure high profile locations for microwave relay nodes. Because such networks use license-exempt spectrum, such networks could be opened to experimenters who don't have Amateur Radio licenses... but such networks typically don't do so as "it's easier" to restrict usage to Amateur Radio Operators.

### Conclusion - Lots of Radio Experimentation Beyond Amateur Radio

Because of limitations of technology, Amateur Radio used to be the primary way to experiment with radio technology because it had ample spectrum and the culture (club meetings, magazines, mentoring, etc.) that enabled such experimentation.

But in this era, radio experimentation is increasingly possible, capable, and arguably more progressive than experimentation within Amateur Radio. For example, there's nothing comparable (that I'm currently aware of) in Amateur Radio to the ease of setting up a Meshtastic network (get your unit running, and look for other nodes that are automatically discovered).

Collectively, Amateur Radio *has* the technology and the *knowledge base* to be able to create new modes that would be interesting to experimenters and attract them into getting involved in Amateur Radio. And... perhaps that's part of the problem, that Amateur Radio has *too* much (historical) technology such as packet radio technology, AX.25 networking, use of voice radios, (inefficient and relatively slow) 1200 bps Audio Frequency Shift Keying (AFSK) data modes, etc. As laudable, and as capable, as the technology of, to cite two examples, [Dire Wolf Software Terminal Node Controller \(TNC\)](#), and the [NinoTNC](#) are to providing data communications that are better and faster than legacy 1200 bps AFSK packet radio... they're hard to set up and many of the paradigms in those units and software are downright cryptic if you don't have the background to understand those paradigms.

One of the most interesting, but ultimately sobering experiences in considering the entry of those interested in radio experimentation into Amateur Radio is to watch a video of a younger, new Amateur Radio operator try to set up data communications over Amateur Radio. The non-radio equivalent is setting up a Bulletin Board System (BBS) and then set up a simulated Plain Old Telephone Service (POTS) - aka, analog telephone lines, so modems can be used to access the BBS.

They usually struggle to set up (rediscover) older, arcane software and get it to work with Linux, implement the data communications, struggle with modems, drivers, protocols, network settings, etc. ... *only to recreate slow data capabilities that are decades old.*

Thus... my motivation to help develop, and evangelize the [IP400 Network Project](#).

*My thanks to Bill Diaz KC9XG whose email and several rounds of discussion formed the basis for this article.*

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## ZR > BEACON

By Steve Stroh N8GNJ

*Short mentions of Zero Retries Interesting items.*

### [DigiPi Version 1.9-3](#)

Craig Lamparter KM6LYW on the DigiPi email list:

DigiPi v1.9-3 is now available. Highlights include AIOC (Baofeng/Kenwood) interface support along with HDMI displays (720p@1fps). The Initialize page now displays currently connected radio/gps audio devices, removing the guesswork for device file names. A new GPS viewer page was added which includes gridsquare, and a new comprehensive SystemInfo page provides

detailed information about your DigiPi's configuration and condition.  
Audio levels are adjustable from your web browser and wifi Hotspot-mode is now 100% reliable on Pi 3/4/5 models.

# DigiPi



|                                     |                          |                                     |
|-------------------------------------|--------------------------|-------------------------------------|
| <input checked="" type="checkbox"/> | APRS TNC/igate           | <input checked="" type="checkbox"/> |
| <input type="checkbox"/>            | APRS HF TNC/igate        | <input type="checkbox"/>            |
| <input type="checkbox"/>            | APRS Digipeater          | <input type="checkbox"/>            |
| <input type="checkbox"/>            | APRS GPS Tracker         | <input type="checkbox"/>            |
| <input checked="" type="checkbox"/> | APRS WebChat             | <input checked="" type="checkbox"/> |
| <input type="checkbox"/>            | AX.25 Node Network       | <input type="checkbox"/>            |
| <input type="checkbox"/>            | Winlink Email Server     | <input type="checkbox"/>            |
| <input type="checkbox"/>            | Pat Winlink Email Client | <input type="checkbox"/>            |
| <input type="checkbox"/>            | ARDOP Modem              | <input type="checkbox"/>            |
| <input type="checkbox"/>            | WSJTX FT8                | <input type="checkbox"/>            |
| <input type="checkbox"/>            | Slow Scan TV             | <input type="checkbox"/>            |
| <input type="checkbox"/>            | FLDigi                   | <input type="checkbox"/>            |
| <input type="checkbox"/>            | JS8Call                  | <input type="checkbox"/>            |

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| <a href="#">PatEmail</a> | <a href="#">AXCall</a>  | <a href="#">JS8Call</a> |
| <a href="#">WSJTX</a>    | <a href="#">SSTV</a>    | <a href="#">FLDigi</a>  |
| <a href="#">Wifi</a>     | <a href="#">Shell</a>   | <a href="#">PktLog</a>  |
| <a href="#">SysLog</a>   | <a href="#">Screen</a>  | <a href="#">Webchat</a> |
| <a href="#">Audio</a>    | <a href="#">SysInfo</a> | <a href="#">GPS</a>     |
| <a href="#">Refresh</a>  |                         |                         |

[Restart](#) [Shutdown](#) [Save Configuration](#)

1.9-3 KM6LYW ©2025



DigiPi is an easy-to-use amateur radio data transceiver hotspot for Raspberry Pi. All radio data modes are easily accessible over wifi via



your phone or web browser. Make FT8, JS8Call, APRS and packet modes work like any other mobile phone app. Hookup a DigiPi to your rig and instantly have access to radio SMS, EMail, and texting. Ultra-light, low-power makes it indispensable for Summit and Park operations. Let's make Ham radio relevant in the information age! DigiPi implements all the data modes we talk about at KM6LYW Radio YouTube channel and is available to Patrons of the channel! A radio license is generally required to use DigiPi, please lookup a local Ham Radio club and get licensed today!

<https://digipi.org/>

Thank you for your continued support.

DigiPi 1.9-3 Changelog

- add All-in-One-Cable AIOC/CM108 radio interface support,

<https://na6d.com/>

- fix wifi hotspot mode on Pi3/Pi4/Pi5, no more drops/hangs
- add HDMI screen support, 1fps
- professional html interface, slider switches for on/off
- audio levels web interface

...

[DigiPi](#) is a remarkable system. The tagline of KM6LYW's YouTube channel is *Reimagining radio in the information age*. You can easily load up a Raspberry Pi, optionally some specific hardware, connect a radio, and be up and running on Amateur Radio data modes quickly. Most notably, DigiPi is designed to be used remotely - on an external laptop, tablet, desktop, or even a mobile phone.

I think that DigiPi version 1.9-3 will be even better received because it adds support for the [“All In One Cable” - AIOC](#). AIOC is a radically simplified audio adapter (and programming adapter) designed for certain Amateur Radio portable radios that just plugs in to the radio and uses USB-C to communicate with the host computer - in this case a Raspberry Pi running DigiPi. This will be about the simplest possible way<sup>4</sup> to get running on data modes using DigiPi (other than some radios that have an integral audio adapter, which is explained in the DigiPi documentation). With DigiPi (or two) Raspberry Pi (or two) and a portable radio (or two), you can easily and inexpensively experiment with data communications over radio.

Amateur Radio has needed such a “starter kit” for easy experimentation with data modes, and I think the combination of DigiPi, AIOC, and an inexpensive portable radio is a good enough “starter kit”.

##

### [Bald Yak, Universe 10, How Does All Fit Together?](#)

Onno Benschop VK6FLAB on his 2025-02-21 podcast / blog / newsletter:

GNU Radio works with things called blocks. Essentially little programs that take data, do something to it, then output it in some way. It follows the Unix philosophy, make each program do one thing well, expect the output of every program to become the input to another, design and build software to be tried early and use tools rather than unskilled labour.

Amateur radio transceivers traditionally use electronics blocks, but if we move to software, we can update and expand our capabilities as the computer we're using gets faster and the GNU Radio blocks evolve, and because it's all digital the computer doesn't actually have to be in the same box, let alone the same room, it could be in multiple boxes scattered around the Internet.

So, the idea of Bald Yak is a collection of blocks that allow you to do radio things. You might have a separate box for each amateur radio mode, AM, FM, SSB, RTTY, CW, WSPR, FT8, FT4, Q65, but also modes like Olivia, FreeDV, SSTV, Packet, PSK31 or Thor. Instead of having to figure out how to wire these modes into your radio and your computer, the infrastructure is already there and you just download another block for a mode you want to play with.

VL6FLAB has *exactly* the right ideas(s) for adapting GNU Radio for folks like me who understand the concepts of Software Defined Radio, and will happily use it when it's simplified down to menu options.

Please click the link to read the entire article. I would have happily reposted the entire article, but that's not fair to VK6FLAB and I want to drive (deserved) attention and traffic to *his* media.

These kinds of basic, common-sense explanations about Software Defined Radio have made me a rabid fan of VK6FLAB, and I can't wait to see what he's ultimately able to come up with when he's completed Bald Yak.

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See the **Zero Retries Boilerplate** page for significant acknowledgements and other information relevant to Zero Retries. For new readers of Zero Retries, that page, and the **About Zero Retries** page has useful information to check out.

My ongoing *Thanks* to:

Tina Stroh KD7WSF for, well, *everything*!

Jack Stroh, Late Night Assistant Editor Emeritus

Shrek Stroh, Late Night Assistant Editor In training

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## Footnotes for this Issue

*To see the relevant sentence for the footnote, just click the footnote number.*

[1](#)

I wasn't directly involved in the served agency and the aftermath of the decision to discontinue involvement with Amateur Radio, thus it's probably better not to name the served agency directly.

[2](#)

With one anachronistic exception, a portion of the mobile telephony spectrum from when analog mobile telephony communications could be received by radio scanners... and even UHF television tuners, and was thus specifically outlawed. That vulnerability has been closed for decades from the use of digital mobile telephony, but that restriction persists in radio scanners.

[3](#)

802.11ah / Wi-Fi HaLow is now years old, but only recently becoming “interesting” because of new low cost radios becoming widely available.

#### [4](#)

Some portable radios are now equipped with embedded Terminal Node Controllers (TNCs) which sound like a good thing, but from reports I’ve read, most of these portable radio embedded TNCs suffer from a lack of memory or other “too optimized for economy” issues to be usable for much else than transmitting and receiving short packets that are typical with Automatic Packet Reporting System (APRS).